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ABSTRACT

A study was conducted to examine the achievement levels of entering freshmen at a two-year college over a 5-year period to determine if scores were significantly different over the years. Analyses were made of the English, reading, and math scores on the Stanford Task Test of Academic Skills for Junior/Community Colleges of a random sample of 100 first-quarter, full-time students who attended a small two-year institution between 1980 and 1984. Study findings included the following: (1) lower achievement scores were found during the first 2 years of testing; (2) overall, freshmen tended to have higher scores on the English portion of the test than on the math and reading portions; (3) correlation coefficients between achievement and age and sex were weak; (4) intelligence test scores were a significant predictor of achievement test performance; and (5) the mean scores showed that students possessed inadequate basic skills to succeed in college academic courses. (LAL)

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A FIVE-YEAR ANALYSIS OF BASIC SKILL COMPETENCIES OF TWO-YEAR COLLEGE FRESHMEN

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ABSTRACT

Basic skills have become chronic for colleges and universities. Data reports have shown that while 63% of all 1980 seniors were enrolled in a postsecondary institution by 1982, a majority had entered college without the prerequisite academic skills needed for college-level work (NCES, 1982).

Consequently, four-year institutions have tighten their admission standards. Similarly, two-year institutions have not only been forced to raise their standards, but recruit high achievers as well.

This study examined the achievement levels of entering freshmen at a two-year college for five years to determine if scores were significantly different over the years. English, reading, and math scores were examined from a random sample of 100.

ANOVA results showed significant mean differences with reading, $F(4,95)=3.10$, $p<.05$ and English, $F(4,95)=3.84$, $p<.01$, but no significant mean difference with math scores, $F(4,95)=1.84$, $p>.05$. Quartile values (Q_3) indicated that 75% of the freshmen scored below the maximum score (13.2) in reading, English, and math. Overall, the scores ranged relatively low over the five years.

The findings tended to be consistent with other literature findings. Although reading and English scores increased during the last three years (1982-84), the mean scores showed inadequate basic skills for college academic courses. The findings of this study are significant for two-year colleges who want to improve admission standards. In addition, if high school graduates know that achievement proficiency is expected even for two-year colleges, students will seek to overcome basic deficiencies if they wish to pursue post-secondary education.

I. INTRODUCTION

When an escalated number of older adults and women arrived on college campuses during the '70s, their college participation rates were welcomed. The enrollments of nontraditional student populations helped to offset the shrinking traditional enrollments of 18-to 22-year old students. As a result, college doors became widely open to accept the student population trends.

By 1979 the college enrollment of part-and full-time adults was 9 percent higher than it was in 1969. Moreover, two-year college institutions experienced a phenomenal growth rate (10%) (Bureau of Census, 1980). With this increased growth rate came institutional changes to accommodate a diverse student population. Policies and programs were modified to foster growth, since the needs of students had to be met.

Subsequently, open admission policies were instituted at most two-and four-year colleges and universities. One of the primary purposes of open addmission was to allow low achievers to benefit from educational opportunities at the college level. Another purpose was to enable working-class people to enroll in noncredit programs. As a result, community colleges became more accessible to meet the educational needs and interests of a community population. Needed skills for business and industry could be acquired with open doors.

This concept of open admission, however, was not widely endorsed by all postsecondary institutions. Opponents challenged the idea, because they feared high academic standards would deterioate, thus, causing, the quality of education to decay. Still another concern was that if low achievers were given access to postsecondary education, they would be unable to excel academically at the college level. The inference being that institutions of higher education would eventually feel obliged to reduce academic standards in order to accommodate students.

On the other hand, supporters of open admissions argued that all students should be given opportunities to acquire educational success at any level. The argument that low achievers need the college experiences was viewed as an educational benefit, not a waste (Roueche, 1981; Vincent, 1981).

Whether or not open admission policies of the '70s crippled academic standards of the '80s is no longer an issue for most four-year postsecondary institutuions. In a decade where basic skills remain chronic for colleges and universities, and achievement scores still remain at a constant low, college doors are closing and admission standards are rising.

Studies from Roueche and Armes (1980) reported more than half the students who entered community colleges read below eight grade level. This was a decline of at least two grade levels since 1971. Data reports have also shown that while 63 percent of all 1980 seniors were enrolled in a postsecondary institution by 1982, a majority had entered college without the prerequisite academic skills needed for college-level work (NCES, 1982). Approximately 60 percent of the colleges and universities reported that reading, writing, and mathematical skills of new student enrollees for 1981-82 had not changed from the previous year. In fact, between 25 and 30 percent of the institutions reported that the academic skills of freshmen and transfer students showed a decrease from the previous year, while only 10 percent of the institutions showed an increase with the skills (Watkins, Chronicle, 1983).

Consequently, the '80s have generated closed doors and raised admission standards for all postsecondary institutions. This affirmation to tighten admission standards does not exempt two-year colleges. In fact, in 1982 community colleges were urged to close their "open doors" admission policies (Chronicle, 1982). As a result, when some community colleges began implementing admission standards for the first time, they found the majority of the new students did lack adequate basic

skills. Some two-year colleges are now rejecting deficient-skilled students until they can do college-level work. No longer are the institutions willing to guarantee high school graduates admittance to their school without the proficiency scores. Of course, this not to say that all two-year colleges concur with the proposed new standards. Some, however, are opposed to a tightly closed-door policy. Yet, it is agreed that standards for entering and continuing students need to be revised.

Revised admission standards of two-year colleges have sensitized them to seek higher achievers. The primary reason is due to the public's negative image of their 1960s and '70s existence. Still, there seem to be conflicting perspectives about the existence and roles of community colleges, as well as the type of students they attract. Consequently, two-year colleges are now seeking high achievers, because four-year schools are frustrated with two-year transfers who are frequently unprepared academically for four-year college courses. The question, however, is can two-year schools attract high achievers, especially when a large number of entering students continue to enroll in remedial courses at colleges? For example, during the 1983-84 academic year, remedial course enrollments increased to 63 percent. Reports also showed that remedial percentages tended to be higher at two-year colleges and institutions with open-admission policies. During this academic year 30 percent of the freshmen at colleges with open-admission policies took remedial math. Comparatively, colleges with selective policies only had 13 percent. Figures also showed that two-year colleges had 23 percent of the freshmen taking remedial writing, while only 17 percent were taking this basic course at four-year institutions (Evangelauf, 1985).

II. PURPOSE OF STUDY

The primary purpose of this study was to examine the achievement levels of entering freshmen at a two-year college for a period of five years. The secondary

purpose was to determine if there were any statistical significant differences with basic competencies over a five-year period. The study addressed five questions:

1. Are the entering freshmen prepared for college-level work?
2. Are the achievement scores an indicator of high achievers enrolled at the college?
3. Can the freshmen academically succeed at the college?
4. Do the students who have high intelligence scores do well in the three basic areas: reading, English, math?
5. Have achievement scores improved over a period of five years?

III. METHODOLOGY

Data were collected from a random sample of 100 first quarter full-time students who attended a small two-year institution during the 1980-84 school years. These students had met admission requirements which included a passing score on the Otis-Lennon Mental Ability Test. The total freshmen population for the five years was approximately 1,000. The data sample included a larger proportion of females (N = 70) than males (N = 30); similarly, a large proportion of whites (N = 71) than blacks and other minorities (N = 29). The Stanford Task Test of Academic Skills for Junior/Community Colleges was used to measure achievement performances and levels in three basic areas: reading, English, and math. The reading test primarily measured comprehension and vocabulary; the English measured the fundamental skills and knowledge of the language, and the math measusred basic competence in arithmetic, concepts, computations, and applications. The reliability coefficients ranged from a split-half estimate of .94 to .95.

At the beginning of each quarter, admitted students were administered the achievement test during orientation week. For the first two years, students were allowed 40 minutes to work on each tested area. However, the next three years

of testing served as an experimental approach by allowing the students to be timed 40 minutes only for the reading area, while removing the time constraint from the other tested areas (English, math). The majority of the students during the last three years of testing tended to complete the achievement test before the expected allotted time. Those students who required more time only exceeded the expected allotted time by no more than 15 minutes.

Five years of freshmen students' achievement scores in reading, English, and math were examined using the one-way analysis of variance (ANOVA). The highest achievement score that could be attained was 13.2 which was college level. Significant mean differences over a period of five years were also analyzed. The level of statistical significance was set at .05. Pearson r and multiple correlation were used to measure the relationship of a single variable with individual achievement scores, as well as the relationships of all independent variables (sex, age, race, and intelligence) with achievement. Regression analyses enabled the author to determine which independent variable could possibly predict achievement scores of the entering freshmen at the college. The level of statistical significance was set at .05.

IV. DATA RESULTS

Five years of the college freshmen's achievement scores in reading, English, and math were examined using ANOVA procedures. Achievement mean scores in the three basic areas are presented in Table I. Lower achievement scores were found during the first two years of testing than with the mean scores during the last three years of testing. As Table I shows, over a period of 5 years, reading mean scores ranged from 6.2 to 11.1; English ($\bar{X}$ = 6.9-11.5), and math ($\bar{X}$ = 6.7-10.4). High achievement scores during the last three years contributed to statistical mean differences with reading, $F(4,95) = 3.10$, $p < .019$; and English, $F(4,95) = 3.84$,

TABLE I
Summary of ANOVA Results of 5-Year Achievement Scores

Entry Year	Reading		English		Math	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
1980	6.2	7.7	6.9	8.1	6.7	7.0
1981	9.5	7.0	10.0	6.0	8.4	6.7
1982	11.2	2.7	12.2	1.8	10.2	2.7
1983	10.4	3.1	11.4	2.2	10.4	2.3
1984	11.1	2.3	11.5	2.0	9.4	4.4

$p < .006$. No statistical significant mean difference was found with math scores. $F(4, 95) = 1.84$, $p > .05$. Post-hoc comparisons using Newman-Keuls Test affirmed that statistical mean differences of 4.19 to 4.95 in reading resulted from high scores (10.4-11.2) with 1982-84 groups. Similarly, English mean scores tended to increase with 1981-84 groups (10.2-12.2). Statistical mean differences over five years ranged from 3.14 to 5.30. However, no statistical significant math mean differences were found. Overall, the freshmen groups tended to do better with English ($\bar{X} = 10.3$, $SD = 5.11$) than with reading and math.

Pearson product-moment analysis of single variables of sex, age, race, and IQ yielded a stronger positive relationship between intelligence and achievement scores in reading ($r = 0.70$, $r^2 = 0.50$) and math ($r = 0.59$, $r^2 = 0.35$). The relationship with English was near zero ($r = 0.14$, $r^2 = 1.85$). Table II shows that when multiple correlations of all four independent variables were computed with performance scores, the results were more comparative than with single measured variables. IQ and race scores had higher multiple coefficients than age and sex. As a result, the multiple coefficient in reading ($R = 0.70$, $R^2 = 0.49$); English ($R = 0.56$, $R^2 = 0.28$), and math ($R = 0.62$, $R^2 = 0.38$) was relatively high.

Although correlation coefficients were weak between achievement and age and sex, all four independent variables (age, sex, race, IQ) were treated as predictors for achievement to increase predictive accuracy. Table III presents a summary of multiple regression results when predictor variables were measured with performances. The b-weights and Beta weights (standardized regression coefficient) for each predictor are also reported. It can be observed that the weights of intelligence scores with the achievement scores were strong when the effects of other variables were held constant. Similarly, the beta weights for race scores were stronger than age and sex. Intelligence and race coefficients were statiscally significant at less than .05.

TABLE II
Correlation Coefficients Between Independent Variables and Achievement Scores

Variables	Reading			English			Math		
	Part. Corr.	Corr. with READ.	Corr. with VARIABLES	Part. Corr.	Corr. with ENG.	Corr. with VARIABLES	Part. Corr	Corr. with MATH	Corr. with VARIABLES
Sex	0	.01	.25	0	.06	.25	0	-0	.25
Age	.01	-.07	.13	0	-.07	.12	0	-.05	.13
Race	.04	.47	.52	.06	.43	.51	.05	.43	.51
IQ	.35	.70	.51	.15	.51	.48	.23	.59	.48
Multiple R		.70			.56			.62	
R^2		.49			.31			.38	
Overall F		23.17			10.67			14.71	
p		.001*			.001*			.001*	

*p is less than significant set at .05.

TABLE III
Summary of Multiple Regression Analyses of Predictors on Achievement Scores

	Reading Scores				English Scores				Math Scores			
Variables	b	Beta/SE	(t)	p <	b	Beta/SE	(t)	p <	b	Beta/SE	(t)	p <
Sex	0.09	.008 .075	.110	.913	.145	.013 .088	.149	.882	-.509	-.046 .083	.549	.584
Age	-0.06	.069 .074	-.930	.355	-0.04	-.050 .086	-.580	.563	-3.19	-.038 .081	-4.71	.639
Race	2.05	.175 .086	2.04 2.04	.044	2.63	.234 .099	2.36	.020	2.36	.207 .094	2.21	.029
IQ	.251	.598 .085	7.07	.001*	.158	.402 .097	4.14	.001*	1.95	.493 .092	5.36	.001*
Predicted Y		9.6				10.3				9.0		
SD		3.8				9.0				3.2		

*p is less than significant set at .05.

When the four predictors were computed to predict achievement scores, the predicted score for reading ($\tilde{Y}$ = 9.6, SD = 3.8); English ($\tilde{Y}$ = 10.3, SD = 2.9); math ($\tilde{Y}$ = 9.0, SD = 3.2) did not deviate far from the actual scores. Data results also indicated that 68 percent of the time the reading achievement scores would be between 7.0 and 13.2; English (7.4 -13.1); math (7.0 - 12.2). Thus, as Figures 1, 2, and 3 show, the achievement scores did not vary much from the predicted mean scores.

V. Conclusions

In 1980 unprepared high school graduates were entering college and universities unable to do college-level work. The findings under study tended to be consistent with other literature findings. Although reading and English scores increased at the college during the last three years (1982-84), the achievement mean scores still showed that the students lacked adequate basic skills for college academic courses. As a result, the college does not appear to be attracting many high achievers.

Some of the students who tended to score high on the intelligence test scored high on the achievement test. This finding suggests that the college should raise IQ standards for college admission, since IQ scores were a significant predictor of achievement performances. Based on the achievement findings, most of the freshmen should do moderately well with academic courses after receiving remedial instructional in the three basic areas. Although the findings show there is still a need for remedial instruction, current educational and economical concerns could possibly compel the college to admit only high achievers to promote academic excellence and reduce budget costs that help service low achievers.

Figure 1. How Reading Achievement Scores Compared With Predicted Reading Scores

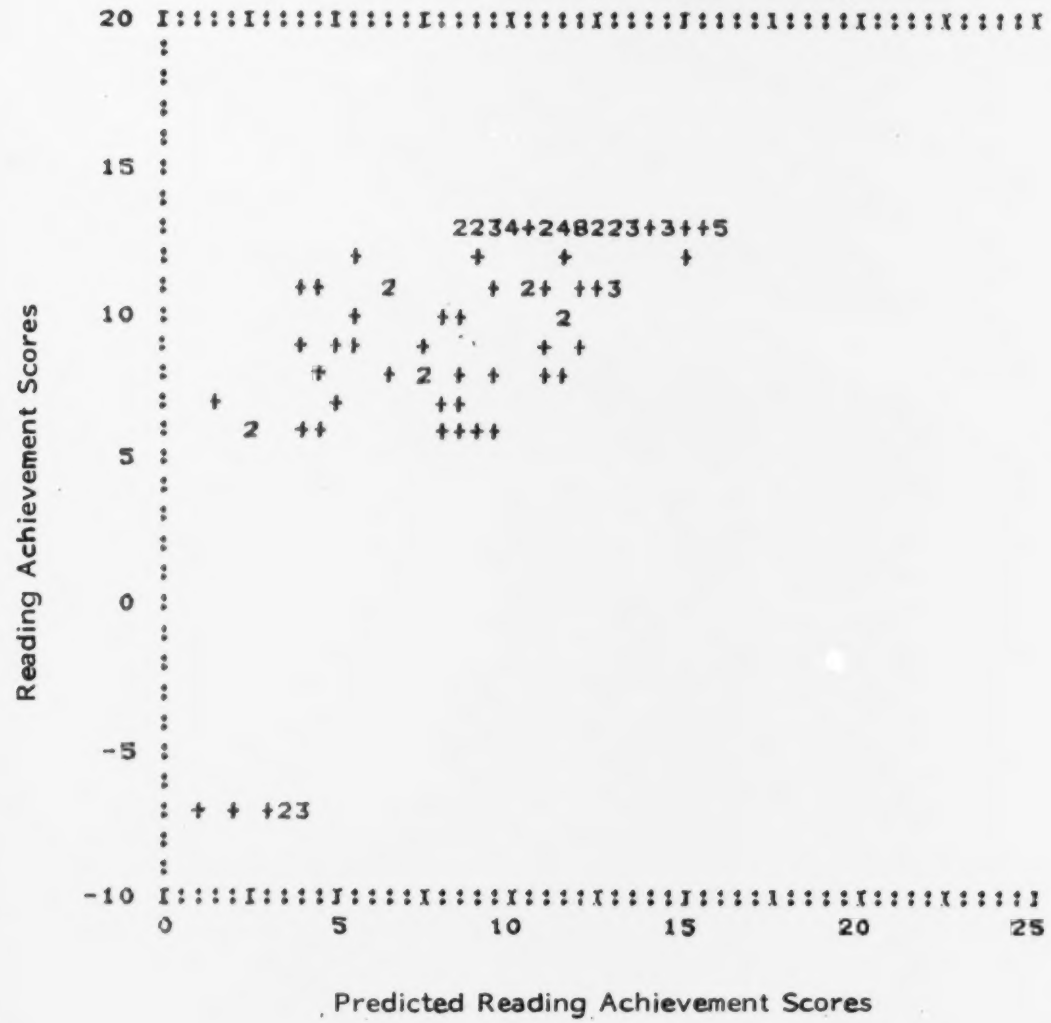


Figure 2. How English Achievement Scores Compared With Predicted English Scores

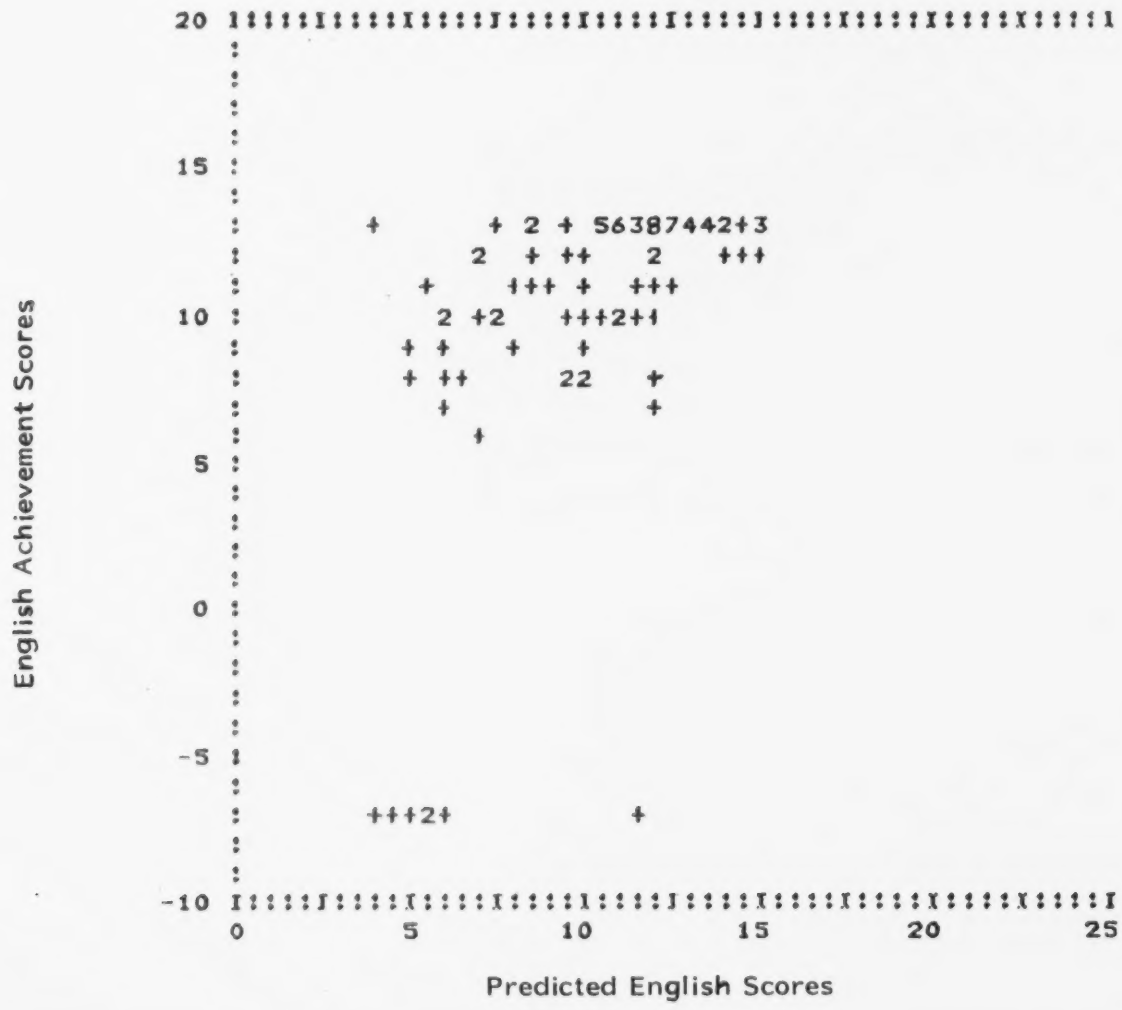
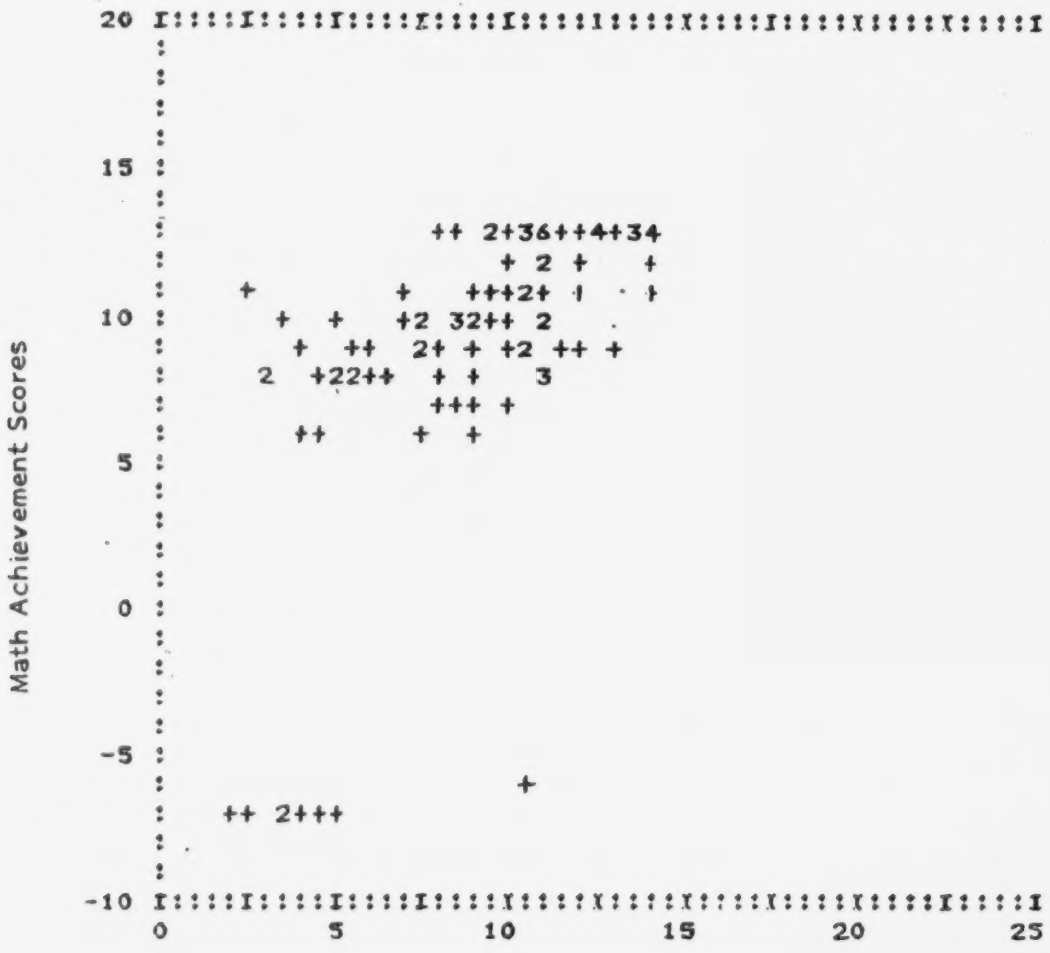


Figure 3. How Math Achievement Scores Compared With Predicted Math Scores



The findings of the study are limited in scope; yet, they are significant for two-year colleges who want to improve admission standards. In addition, if graduating high school seniors know that achievement proficiency is needed even at two-year colleges, students will seek to overcome basic deficiencies if they wish to pursue postsecondary education.

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